

**CLAIMS:**

1. A method of producing a treated sludge product comprising:
  - (a) forming a sludge mixture by mixing untreated sludge with at least one alkaline material in an amount sufficient to raise pH of the sludge mixture to a level of at least about 12 and to increase percent solids in the sludge mixture to at least about 40% by weight;
  - (b) forming a dried sludge mixture by drying the sludge mixture from step (a) in a direct or indirect dryer thereby increasing the percent solids thereof to at least about 50% by weight;
  - (c) recycling a portion of the dried sludge mixture from step (b) to step (a); and
  - (d) pasteurizing the dried sludge mixture from step (b) at a temperature at or above about 52°C to form a treated sludge product.
2. The method of claim 1, wherein said drying is conducted by direct drying.
3. The method of claim 2, wherein said direct drying comprises contacting said sludge mixture with heated air in a rotary drum dryer.
4. The method of claim 3, further comprising collecting particulates from an exhaust gas stream of said rotary drum dryer and recycling said particulates to step (a).
5. The method of claim 4, wherein said particulates are collected in a combination venturi scrubber and baghouse filter.

6. The method of claim 1, wherein said pasteurizing comprises:  
maintaining the dried sludge mixture at a temperature of from about 52°C to about 100°C for a period of time sufficient to reduce the density of fecal coliform in the sewage sludge to less than 1000 most probable number per gram of total dry weight solids or to reduce the density of *Salmonella* sp. bacteria to less than 3 most probable number per gram of total dry weight solids.
7. The method of claim 1, wherein the portion of said dried sludge mixture recycled from step (b) to step (a) is automatically controlled.
8. The method of claim 7, wherein the portion of said dried sludge mixture recycled from step (b) to step (a) is automatically controlled in response to a detected condition of said treated sludge product.
9. The method of claim 8, wherein said detected condition comprises at least one of BTU content, alkalinity, nutrient and trace nutrient levels.
10. An agricultural liming agent made by the method of claim 1.
11. A soil conditioner made by the method of claim 1.
12. A fertilizer made by the method of claim 1.
13. A topsoil blend ingredient made by the method of claim 1.

14. A fuel made by the method of claim 1.
15. A system for producing a treated sludge product comprising:
  - (a) a mixer for mixing untreated sludge with at least one alkaline material to form a sludge mixture;
  - (b) a dryer for drying the sludge mixture to form a dried sludge mixture;
  - (c) a recycle feed to said mixer, said recycle feed comprising a portion of the dried sludge mixture from the dryer; and
  - (d) holding means for receiving and pasteurizing the dried sludge mixture from the dryer to produce a treated sludge product.
16. The system of claim 14, wherein the dryer comprises a direct dryer.
17. The system of claim 16, wherein the direct dryer comprises a rotary drum dryer in which heated air contacts the sludge mixture.
18. The system of claim 17, further comprises means for collecting particulates from an exhaust gas stream of said rotary drum dryer and recycling said particulates to the mixer.
19. The system of claim 18, wherein said means for collecting particulates comprises a venturi scrubber and baghouse filter.

20. The system of claim 15, further comprising an automatic controller for controlling the portion of the dried sludge mixture recycled to the mixer.
21. The system of claim 20, further comprising a recycle bin for holding dried sludge mixture for recycle to the mixer and said automatic controller regulates the amount of dried sludge mixture recycled to the mixer from the recycle bin.
22. The system of claim 20, further comprising at least one sensor for detecting a condition of the treated sludge product.
23. The system of claim 22, wherein the sensor detects a condition comprising at least one of BTU content, alkalinity, nutrient and trace nutrient levels.
24. The system of claim 22, wherein the portion of dried sludge mixture recycled is determined by the detected condition.
25. The system of claim 20, wherein said automatic controller is a programmable logic controller.
26. The system of claim 15, wherein the dryer comprises an indirect dryer.